Amendments to the Claims:

1-68. (Canceled)

69. (New) A method of depositing elemental metal in the vicinity of an enzyme, comprising:

combining an enzyme with metal ions, an oxidizing agent and a reducing agent;

incubating the enzyme with the metal ions in the presence of the oxidizing agent and the reducing agent, whereby the metal ions are reduced to elemental metal; and

depositing the elemental metal in the vicinity of the enzyme, wherein the metal ions are selected from the group consisting of silver, gold, iron, mercury, nickel, copper, platinum, palladium, cobalt, iridium ions and a mixture thereof.

70. (New) The method of claim 69, wherein the metal ions are silver ions.

71. (New) The method of claim 69, wherein the metal ions are silver ions in a solution of silver acetate.

72. (New) The method of claim 69, wherein the enzyme is an oxido-reductase.

73. (New) The method of claim 69, wherein the enzyme is peroxidase.

74. (New) The method of claim 69, wherein the enzyme is horseradish peroxidase.

75. (New) The method of claim 69, wherein the enzyme is conjugated to streptavidin.

76. (New) The method of claim 69, wherein the enzyme is conjugated to an antibody.

77. (New) The method of claim 69, wherein the oxidizing agent is an oxygen-containing oxidizing agent.

78. (New) The method of claim 69, wherein the reducing agent is selected from the group consisting of hydroquinone, a hydroquinone derivative, and n-propyl gallate.

79. (New) The method of claim 69, wherein the metal ions act as a substrate for the enzyme.

80. (New) The method of claim 79, wherein the enzyme is peroxidase and the metal ions are incubated with the peroxidase in the absence of an organic substrate of the perioxidase.

81. (New) The method of claim 80, wherein the organic substrate is a colorless organic substrate capable of being converted by the peroxidase to a colored substrate.

82. (New) The method of claim 81, wherein the colorless organic substrate is 3,3'-diaminobenzidine or 5-bromo-4-chloro-3-indolyl phosphate.

83. (New) The method of claim 69, wherein the step of incubating includes

incubating the enzyme with the metal ions;

adding the oxidizing agent and reducing agent to the mixture of the enzyme and the metal ions; and

incubating the enzyme with the metal ions in the presence of the oxidizing agent and the reducing agent.

84. (New) The method of claim 69, wherein the step of incubating includes

incubating the enzyme with the metal ions;

adding the reducing agent to the mixture of the enzyme and the metal ions;

adding the oxidizing agent to the mixture of the enzyme, the metal ions and the reducing agent; and

incubating the enzyme with the metal ions in the presence of the oxidizing agent and the reducing agent.

85. (New) The method of claim 69, wherein the step of depositing includes depositing the elemental metal within about 1 micron of the enzyme.

86. (New) The method of claim 69, wherein the step of depositing includes depositing the elemental metal in the vicinity of the enzyme within a cell.

87. (New) The method of claim 69, further comprising: localizing the enzyme in the area of a predetermined antigen.

88. (New) The method of claim 87, wherein the predetermined antigen is a human cancer antigen.

89. (New) The method of claim 87, wherein the predetermined antigen is a Her-2/neu protein.

90. (New) The method of claim 69, further comprising: defining an antigen; and localizing the enzyme to the area of the defined antigen.

91. (New) The method of claim 69, further comprising: localizing the enzyme in the area of a predetermined nucleic acid or nucleic acid probe.

92. (New) The method of claim 91, wherein the predetermined nucleic acid is a Her-2/neu gene or a nucleic acid probe for a Her-2/neu gene.

93. (New) The method of claim 69, further comprising: defining a nucleic acid probe; and binding the enzyme to the defined nucleic acid probe.

94. (New) The method of claim 69, further comprising: binding the enzyme to a member selected from antibody, antibody fragments, peptide, nucleic acids, nucleic acid probes, carbohydrates, drugs, steroids, products from plants, animals, humans and bacteria, and synthetic molecules, where each member has an affinity for binding to particular targets.

95. (New) The method of claim 69, further comprising: binding an antibody to a predetermined antigen in a tissue section; and binding the enzyme to the antibody.

96. (New) The method of claim 95, wherein the binding of the antibody to the enzyme is through biotin-avidin interaction.

97. (New) The method of claim 96, wherein the antibody is a biotinylated monoclonal antibody; and the enzyme is conjugated with streptavidin.

98. (New) The method of claim 95, wherein the tissue section is embedded in a solid support.

99. (New) The method of claim 98, wherein the solid support is paraffin.

100. (New) The method of claim 69, further comprising: binding a nucleic acid probe to a predetermined gene in the cells of a tissue section; and binding the enzyme to the nucleic acid probe.

101. (New) The method of claim 100, wherein the binding of the nucleic acid probe to the enzyme is through biotin-avidin interaction.

102. (New) The method of claim 101, wherein the nucleic acid probe is labeled with a fluorescent moiety; the enzyme is conjugated to streptavidin; and the binding of enzyme to the nucleic acid probe is through a biotinylated antibody against the fluorescent moiety.

103. (New) The method of claim 69, wherein the metal ions are silver ion; and the method further comprises pretreating the enzyme with gold ions prior to the step of incubating.

104. (New) The method of claim 103, wherein the step of pretreating includes washing away residual gold ions prior to the step of incubating.

105. (New) The method of claim 69, wherein the enzyme is horseradish peroxidase; the metal ions are silver ion; the oxidizing agent is hydrogen peroxide; and the reducing agent is hydroquinone.

106. (New) The method of claim 69, wherein the step of incubating includes incubating the enzyme with the metal ions in the presence of the oxidizing agent and the reducing agent in a controlled pH buffer solution.

107. (New) The method of claim 106, wherein the controlled pH buffer solution is a citrate buffer at about pH 3.8.

108. (New) The method of claim 69, further comprising: stopping the deposition of the elemental metal to the vicinity of the enzyme after a certain period of time.

109. (New) The method of claim 108, wherein the step of stopping includes washing away residual metal ions from the enzyme.

110. (New) The method of claim 69, further comprising: detecting the elemental metal deposited in the vicinity of the enzyme.

111. (New) The method of claim 69, further comprising: detecting the elemental metal deposited in the vicinity of the enzyme by automatallography.